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Migrating From Traditional System To Cloud Computing Technology

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Abstract: **Cloud Technology is one of the upcoming technology where most of the organizations are migrating towards the cloud. In implementing the regular traditional system there are so many drawbacks. Nowadays every organizational system is moving towards the cloud computing to have the centralized system. Because of its features and the benefits people are showing interest in migrating their traditional application to the cloud application. Cloud computing is a technology which provides different resources on pay and use basis like software, Hard ware. Apart from these it is even offering other services like data warehouses, application logics, graphical interfaces, Recovery and security etc. All these resources can be utilized by more number of users by sharing them at different time intervals. All these resources are get shared by using the network. With the help of cloud computing without any new technology, infrastructure and the platform we can work for any sort of the business.**

Keywords— **Cloud Computing; PaaS; SaaS; IaaS;**

I. INTRODUCTION

Cloud computing is a computing paradigm, where a large pool of systems are connected in private or public networks, to provide dynamically scalable infrastructure for application, data and file storage. With the advent of this technology, the cost of computation, application hosting, content storage and delivery is reduced significantly. Cloud computing is a practical approach to experience direct cost benefits and it has the potential to transform a data center from a capital-intensive set up to a variable priced environment. The idea of cloud computing is based on a very fundamental principal of „reusability of IT capabilities'. The difference that cloud computing brings compared to traditional concepts of "grid computing", "distributed computing", "utility computing", or "autonomic computing" is to broaden horizons across organizational boundaries.

II. BENEFITS OF CLOUD COMPUTING

a. Dynamic Environment: Whenever the organization needs any kind of service then it may get that service on demand by the cloud computing environment. It provides all the computing resources which are need to run the organization with minimum infrastructure. It is not compulsory to have all the details to be stored in the hospitals or health industry regarding a patient. From any hospital location we can connect to the cloud and view his details.

b. Huge network access: This is another important benefit of the cloud computing where resources can be shared by the network and these resources are compatible for any sort of devices. By this we can view the patient information from anywhere and with any device.

c. Flexible: Whatever the services which are needed by the organization only those services can take by the organization. It is like pay for what you use. If the need of the resources is increased then you can scale up the utilization of the resources on demand. When we connect to the cloud then only we have to pay the service charge.

d. Pool of Resources: Cloud computing environment provides pool of resources and these resources can be used by the applications as and when needed. Only for the usage of these resources one has to pay. As implementing all the infrastructures by hospitals sometimes not possible and sending and viewing the reports may takes time. With this patient details can be viewed by any other doctor at the same moment.

e. Mobility: Another important benefit is these cloud services can be used from anywhere and anytime. It provides the ability to communicate between the applications, user and even in the use of other resources. Whenever there is an emergency to consult the experienced doctor then he can directly view the reports from the cloud.

f. Resource management: Resource management is one of the processes which are having the functionalities like allocating the resources, computing the resources, storage of the resources, networking of the resources. All these activities will come under the resource management. (Brendan Jennings & Rolf Stadler, 2014).

g. Disaster recovery: There will be different types of organizations like small to big. Small organization will not have the capacity to recover the data when there exists any disaster. But with the help of the cloud, even any disaster occurs also, it can be recovered. Even if the hospital is closed, all these details present in the cloud.(salesforece UK, 2015)

h. Security: If our machine or laptop is not working properly, then there is no need to worry, because we are not working with our storage system. We are working with the cloud. With the other laptop we can connect and continue our work. Enough security is provided to the cloud not to happen any unwanted situation.(Benefits of cloud computing, 2009)

Figure 1: Benefits of cloud Computing.

III. CASE STUDY IN CONVERTING TRADITIONAL SYSTEM TO CLOUD SAAS

Currently ThinkSoft Technologies company is running its payroll in the local system. All the data of the employees of the company are stored in the local data base. If there occurs a crash to the database or any disaster occurs then all the data which is stored may not be recovered. Sometimes small organization may not have economical capabilities to recover it. Even sometimes technically also it is not possible. To overcome all these issues, management of the Thinksoft Technologies Company wants to move to the cloud environment and trying to prepare a report that what are the benefits that will be achieved by moving to cloud environment.

Major Benefits and Challenges for migrating to the cloud by ABC payrolls: Cloud computing provides SaaS, which is software as a service is one of the component of the cloud computing environment shown in the figure 1. It eliminates necessity of installing and running the application in their own systems. By implementing this service any organization need not to manage their own data centers. Even there is no need to have the licensed software for running their applications. It is providing Payroll HRM package with security standards like ISO 27001 as well as SSAE 16 and ISAE 3402.

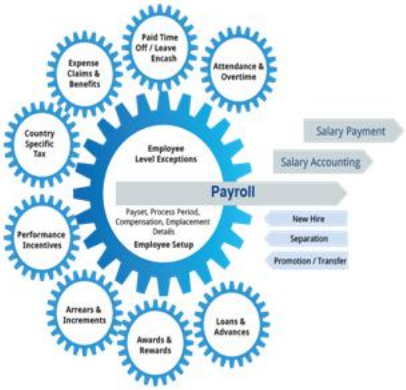


Figure 2: Payroll functionalities.

a. As the small organization is having the limited funding capacity, it may not invest more on the security. But the cloud vendors are investing huge capital on providing the security features to gain the confidence of the customers. These people are professional in providing the data in secured way. Even when there is a disaster our data will be safe in the cloud.

b. Another benefit of using the cloud in payroll system is lowering the operating cost. We can reduce the staff in the organization, because we generally maintain fewer infrastructures when we are operating with the cloud. It also increases the employee productivity because all the resources are available at one place and making use of them is the task.

c. Reduction of administrative costs: Another important benefit when moving into cloud is administrative costs will be reduced. All the systems should work continuously, network should be monitored. To do this people and the machines are required. But most of this cost is reduced when we move into cloud.

d. If Thinksoft Technologies Company used to maintain the software, then if the requirements are changed there is the need of changing the application. But in the cloud it automatically have the updates and it will even do the patch management.

e. We can know the details of the employ from anywhere, if we are connected to the internet. It provides heterogonous device connectivity and from anywhere we can access the data.

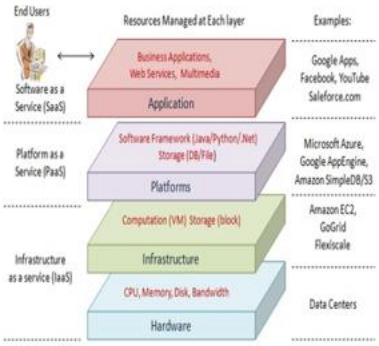
f. If Thinksoft Technologies Company moves the Payroll system on to the cloud, then we can have the possibility of integrating our modules with other modules. There are so many API's

which provides the integration with other modules.

g. Competitive advantage: When we are moving to migrate our standalone application to the cloud environment then we may even have the competitive advantage like we may operate from anywhere, provide the services to our employees when and where required. Sometimes they may have the chance to connect to the cloud from anywhere.

h. As payroll contains the sensitive information of the organization, enough security should be taken for that. It also needs regular updating. This is quiet challenging task for SaaS module.

All cloud providers are taking different security measurements and investing huge amount on the security. This cannot be done by the organizations like our Thinksoft Technologies company.



Figue 3: Cloud computing Architecture:

explained with their advantages and dis-advantages.

IV. MIGRATING TO IAAS

Till now Thinksoft Technologies Company has concentrated moving its application to the SaaS module. Now it also wants to migrate its company to utilize the feature of IaaS module. IaaS is another service component which is present in the cloud computing. This component offers the services like hardware (servers, networks, storage), file management, virtualization mechanisms etc. These services are provided on demand and the payment made for availing these pay for what you use.

IaaS should be implemented by the owner of the application or organization. It provides the middleware and application support as a kind of services to its consumers. When compared to the user of SaaS, IaaS user should be more responsible in managing data centers, middle wares, operating systems and applications. We can assume Amazon Web services as IaaS example.

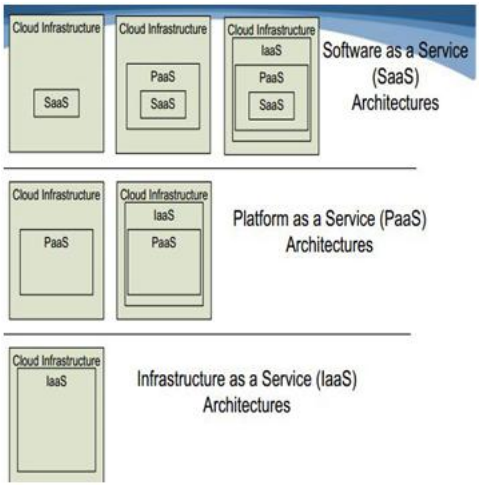


Figure 4: Infrastructure as a Service.

The additional areas which has to be concentrated by the Thinksoft Technologies Company to migrate into the IaaS model are

a. Implementing the Virtual machine: By using the concept of virtual machines people who want to use this service can be installed the virtual machine on their systems. All the applications which are run by the consumers should be virtual regarding the storage, communication and computation to implement the IaaS module. In implementation of IaaS module consumers need not bother about the history and background of the services because all of the services which are provided should made virtual and they may be shared by many number of users.(Lola Yorita Astri, 2015).

b. Redundancy and Reliability: When you place your total infrastructure in the globe, then there won't be any kind of failures of the sites. This can be totally viewed throughout the globe without any site failures. Making available to all the consumers is very important now a day. This service can be achieved by the IaaS and make the consumers to rely on us at any point of time. When we establish more organizations then every organization need same infrastructure and it will gets duplicated as well as we are implementing huge economy. By using IaaS model cost will be reduced as well as redundancy is also eliminated.

c. Availability: When Thinksoft Technologies Company wants to move to IaaS model then the company is trying to make the entire infrastructure available to all its employees and consumers to make use of these resources. To avail the resources of the organization by the consumers, an application should be developed and maintained by the cloud to provide the access by the consumers. Amazon Web Services is an example of IaaS cloud service provider.

d. Power Resources: Iaas, which is one of the components of the cloud computing mainly, concentrates on effective utilization of the power. The resources which are used will consume less energy and also it depends on various power sources like solar and wind energy. It also implements different cooling system which will support the effective utilization of the processing resources.

e. Location Independence: When we want to move our organization from one place to the other, then we have to shift the entire infrastructure which is present in the organization. But if we use IaaS module, we can achieve the location independence. Without any physical stress we can shift from one place to the other.

f. No Failures: when we are maintaining the data in our organization, if some problem occurred to our server then all the functionalities will get disturbed. If we use the cloud component then automatically backup server will take care of all the processing failures.(Interoute, 2016)

V. LIMITATIONS OF CLOUD COMPUTING

Till now we have seen the benefits of cloud computing. But before migrating to the cloud system, one has to know the limitations of the cloud technology. So that one can estimate whether we can move to the cloud technology or not. The following are some of the limitations of the cloud technology.

a. Network Connection: Cloud system mainly runs when there is continuous connectivity of the network. To have the increased performance, then having the network is mandatory. One has to face the problem when there is network disturbance.

b. Control of Data Security: When we are hosting our application on the cloud means just we are keeping our whole business in others hand. We will not be having total control on our application. There is a chance of phishing and hacking attacks are possible because of hosting this on the public cloud.

c. Hidden costs: While implementing the application, we will be knowing the all other cots which are incurred in the implementation. That will be knowing while implementing the system.

d. Integration with other application: If we want to integrate our module or application with other application is the cloud then it is somewhat difficult when compared to the traditional applications.

VI. CONCLUSION

This paper presents the need of cloud computing technologies along with the benefits of using it. Apart from that, we took a case study and presented how to move the traditional system towards the cloud computing technology.

With all the above advantages, our Thinksoft Technologies Company will definitely get benefited and all these advantages will be enjoyed by the staff and the organization.

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